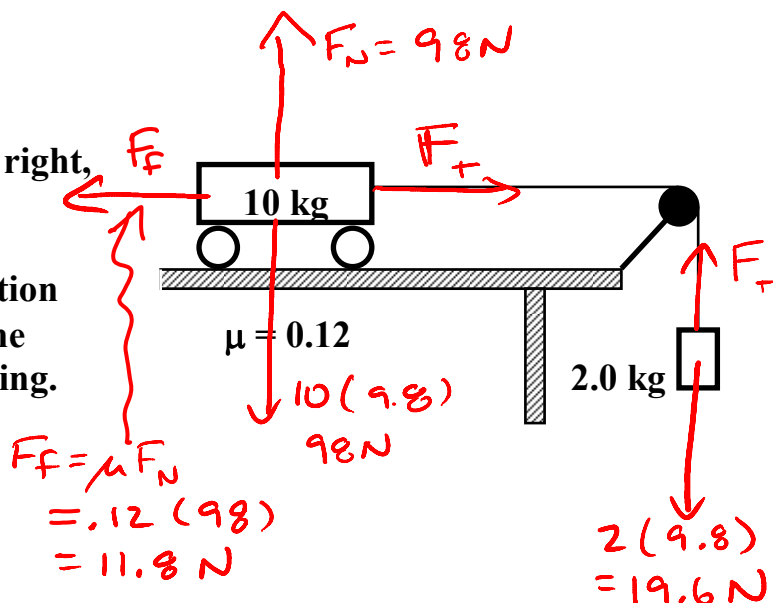
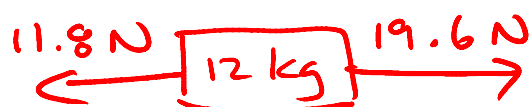


Example #14. In the diagram to the right, the weight of the 2.0 kg mass exerts a force on the system causing both masses to move. Given the information listed, find: (a) the acceleration of the system and (b) the tension in the string.



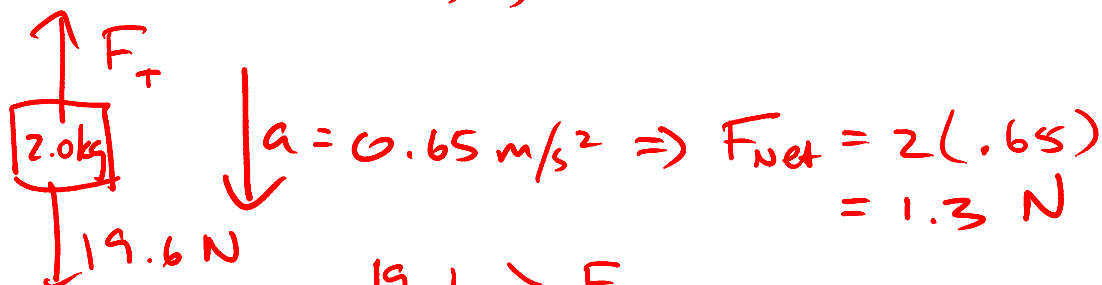
a) f.b.d. of system:



$$F_{\text{net}} = 19.6 - 11.8 = 7.8 \text{ N}$$

$$F_{\text{net}} = ma \quad 7.8 = 12a \quad \boxed{a = 0.65 \text{ m/s}^2}$$

b) f.b.d. of hanging mass (easiest)



$$19.6 > F_T, \text{ so}$$

$$F_{\text{net}} = 19.6 - F_T$$

$$F_T = 19.6 - 1.3 \quad \boxed{F_T = 18 \text{ N}}$$